

The Effectiveness of Flipchart-Based Menstrual Hygiene Education in Improving Adolescent Girls' Knowledge: A Pre-Experimental Study

Uswatun Khasanah¹, Muhammad Ali Sodik²

Public Health, Universitas STRADA Indonesia, Kediri

Corresponding author : uswatunkhaasanah03@gmail.com

ABSTRACT

Menstrual hygiene is a crucial aspect of reproductive health for adolescent girls. A lack of knowledge and inappropriate attitudes regarding menstrual hygiene can increase the risk of reproductive tract infections. Therefore, engaging and easily understandable educational media, such as flipcharts, are needed. This study aimed to determine the effect of flipchart-based education on improving menstrual hygiene knowledge among adolescent girls at MTs Nurul Islam. The study employed a pre-experimental design using a one-group pretest-posttest approach. The sample consisted of 43 respondents selected via simple random sampling. Data were collected using knowledge and attitude questionnaires and analyzed using the Paired Sample T-test. The results showed that the mean knowledge score increased from 7.30 to 12.12, a difference of 4.81. The Paired Sample T-test yielded a Sig. (2-tailed) value of 0.000 ($p < 0.05$), indicating a significant difference in knowledge levels before and after the flipchart-based education. The study concludes that flipchart-based education is effective in improving adolescent girls' knowledge regarding menstrual hygiene.

Keywords: Flipchart, Health Education, Menstrual Hygiene, Knowledge.

INTRODUCTION

Poor menstrual hygiene can increase the risk of reproductive health issues, such as reproductive tract infections (RTIs), urinary tract infections (UTIs), pathological vaginal discharge, and genital irritation. Inadequate menstrual hygiene practices can also impact the health, well-being, and quality of life of adolescent girls. WHO data indicates that the highest incidence of reproductive tract infections (RTIs) occurs among adolescents (35%–42%) and young adults (27%–33%). These high rates among adolescents are primarily driven by cases of candidiasis (25%–50%), bacterial vaginosis (20%–40%), and trichomoniasis (5%–15%) (World Health Organization, 2024).

Adolescent reproductive health issues in Indonesia remain a major public health concern requiring special attention (Aprianti et al., 2026). Data from Statistics Indonesia (BPS) for 2022 indicate that the population of adolescent girls aged 10–19 in Indonesia exceeds 22 million. This substantial figure highlights that adolescents are a group requiring special attention regarding reproductive health maintenance. Without adequate health education support, adolescents are at risk of facing various reproductive health issues, including improper menstrual hygiene practices (Badan Pusat Statistik., 2022).

During menstruation, adolescents should maintain optimal genital hygiene, especially the vaginal area. Lack of attention to hygiene in this area can trigger the growth of pathogenic microorganisms, such as bacteria and fungi, which can potentially cause infections (Fajrin Violita et al., 2025). Maintaining menstrual hygiene is a key focus during the menstrual cycle. Menstrual hygiene remains a reproductive health issue that requires attention. Some adolescent girls and women of reproductive age still lack knowledge about menstrual hygiene, which results in less than optimal reproductive organ hygiene (Indri et al., 2026).

Maintaining menstrual hygiene aims to maintain the cleanliness and health of reproductive organs during menstruation, prevent reproductive tract infections, reduce the risk of irritation and discomfort (Putu et al., 2025). Various studies show that many adolescent girls still have limited knowledge about proper menstrual hygiene practices, potentially increasing the risk of reproductive health problems. Inadequate knowledge about menstruation and personal hygiene can lead to incorrect use of sanitary napkins, improper hygiene habits for the reproductive organs, and low awareness of the importance of maintaining genital hygiene during menstruation (Ratnaningsih et al., 2026).

Based on the results of a preliminary study conducted on September 22, 2025, at Mts Nurul Islam Kediri, interviews with 10 female students revealed that most still had poor knowledge regarding menstrual personal hygiene. Of these, 7 only changed their sanitary napkins when bathing and when they were full, thus not meeting health recommendations. Some students also experienced rashes and itching during menstruation. This situation indicates that adolescent girls' awareness of maintaining personal hygiene during menstruation is still less than optimal.

The impact of not maintaining cleanliness during menstruation is that you are susceptible to urinary tract infections, reproductive tract infections, and skin irritation (Kemenkes RI, 2017). Poor personal hygiene habits during menstruation can have psychosocial and physical impacts on adolescent girls. Psychosocially, this can affect social interactions, self-confidence, self-esteem, comfort, and the need to love and be loved. Physically, poor hygiene habits can cause pathological vaginal discharge, which, if left untreated, can lead to reproductive tract infections (ISR) (Fadilasani et al., 2023).

One way to reduce menstrual discomfort is by maintaining good hygiene. Hygienic behavior during menstruation is not something that just happens; it is a learned process, as individuals understand the positive and negative impacts of certain behaviors related to menstruation. Hygienic behavior during menstruation can be achieved by cleaning the vagina with clean water and wiping from front to back (from the vagina to the anus) to prevent dirt and bacteria from the anus from entering the vagina. Furthermore, sanitary pads should be changed regularly, ideally before they are full or a maximum of every six hours. The use of chemical cleansers is not recommended..

Maintaining personal hygiene can be achieved by changing sanitary napkins at least four times a day. After urinating, defecating, or bathing, the genital area should be cleaned by wiping from front to back (from the vagina to the anus), then dried with a tissue or towel to remove moisture. Choosing the right underwear is also important, because the material of the underwear affects the health of a woman's reproductive organs. Good underwear should be made of a material that absorbs sweat well to keep the genital area dry and clean (Sutrisno, 2025).

Health education media is one of the instruments and initiatives used to present health messages and explanations to be conveyed in order to increase knowledge which is ultimately expected to change their knowledge of health towards health changes (Kartika Adyani, 2024).

To improve the understanding of adolescent girls regarding menstrual hygiene, effective and easy-to-understand educational media are needed. Flipcharts provide a combination of visuals, text, and explanations that increase student engagement during the learning process (Makassar, 2025).

This research was conducted at MTs Nurul Islam in Kediri City to determine the effect of interactive flipchart media on improving adolescent girls' knowledge about menstrual hygiene. Adolescent girls need accurate information about menstrual hygiene to be able to practice good hygiene during menstruation. Therefore, the use of educational flipchart media was chosen with the aim of being engaging and easy to understand to support the learning process and understanding of reproductive health and maintaining hygiene during menstruation (Sutrisno et al., 2022).

METHODS

The research design used is quantitative descriptive with Pre-Experimental design using one group pretest-posttest approach which aims to find out the increase in knowledge of adolescent girls regarding Menstrual Hygiene using research media, namely Flipchart media. The population in this study were all adolescent girls in grades VII, VIII and IX at Mts Nurul Islam Kota Kediri with a population of 48 adolescent girls. The sample of this study was 43 adolescent girls whose respondents were later selected using simple random sampling techniques according to the criteria in the study. In this study the instrument used was a knowledge questionnaire distributed before and after the intervention in order to see how changes after being given education and before being given education about menstrual hygiene. Data analysis was carried out using paired t-test to determine the difference in knowledge scores before and after the intervention.

RESULT AND DISCUSSION

Table 1: Distribution of Respondents by Age

Age	Frequency	Percentage (%)
13 years	1	2.3
14 years	21	48.8
15 years	16	37.2
16 years	5	11.6
Total	43	100

Based on Table 1 above, it is known that the majority of respondents were 14 years old, namely 21 respondents (48.8%).

Table 2: Distribution of Respondents Based on Age of First Menstruation

Age of First Menstruation	Frequency	Percentage (%)
11	9	20.9%
12	15	34.9%
13	15	34.9%
14	4	9.3%
Total	43	100%

Based on Table 2 above, it is known that the ages of 12 and 13 are the ages most frequently experienced for the first menstruation, at age 12 with a number of respondents of 15 (34.9) while at age 13 the number was also the same.

Table 3 : Cross tabulation of respondents' knowledge levels before and after education through flipcharts at Mts Nurul Islam

Tingkat Pengetahuan	Pre Test		Post Test	
	f	%	f	%
Not Good	30	69,8	0	0,0
Enough	13	30,2	16	37,2
Good	0	0,0	27	62,8
Total	43	100	43	100

Based on Table 3 above, it is known that the majority of respondents were in the poor category, namely 30 people (69.8%). After the intervention, there was an improvement, with the majority of respondents being in the good category, namely 27 respondents (62.8%), and no respondents were in the poor category.

Table 4 : Average Knowledge Score of Knowledge Increase Before and After Education Using Flipchart Media

Variable	n	Mean $\pm$ SD
Pretest	43	7.30 $\pm$ 1.994
Posttest	43	12.12 $\pm$ 1.636

Based on Table 4 above, the knowledge of adolescent girls about menstrual hygiene increased after being given education using interactive flipchart media, as shown by the change in the average pretest score of 7.30 and the average posttest score of 12.12, so there was a difference in scores of 4.82.

Table 5 : Paired Sample t-test Results of Knowledge Increase Before and After Education Using Flipchart Media

Variable	Mean Difference	t	df	p-value
Pretest–Posttest Knowledge	-4.814	-18,483	43	<0,001

Based on Table 5 above, the results of the Paired Sample T-Test show a p value of 0.000 ($p < 0.05$) with a t value of -18.483 on the knowledge variable and t value of -9.858 on the attitude variable, so that interactive flipchart media has a significant effect on increasing the knowledge and attitudes of adolescent girls about menstrual hygiene.

DISCUSSION

Research conducted on adolescent girls at MTs Nurul Islam, Kediri City, showed that before being provided with education through interactive flipcharts, most girls at MTs Nurul Islam, Kediri City, had low levels of knowledge, with the majority falling in the "poor" category (69.8%). After the intervention, knowledge increased, as evidenced by the absence of respondents in the "poor" category and the majority moving into the "good" category (62.8%). These findings indicate that the use of interactive flipcharts is effective in improving adolescent girls' knowledge about menstrual hygiene.

The effectiveness of education using interactive flipcharts was also evident in the increase in the average knowledge score of adolescent girls regarding menstrual hygiene. The average knowledge score increased from 7.30 in the pretest to 12.12 in the posttest, a difference of 4.82 points. Furthermore, the results of the Paired Sample T-Test showed a p-value of 0.000 ($p < 0.05$) with a t-value of -18.483 for the knowledge variable. These results indicate that providing education through interactive flipchart media significantly increased adolescent girls' knowledge regarding menstrual hygiene.

After receiving education using interactive flipchart media, there was a significant increase in respondents' knowledge levels. This change indicates a significant increase in knowledge, both in terms of the number and distribution of categories. The disappearance of the "poor" category and the increase in the "good" category indicate that respondents were able to better understand the material presented after the intervention.

The increase in knowledge obtained by respondents is in line with the theory (Notoatmodjo, 2012) which explains that knowledge is formed through the process of sensing an object, primarily through sight and hearing. The information received is then processed into understanding and stored in memory, thereby influencing a person's level of knowledge. In this study, respondents received education on the meaning of menstrual hygiene and how to use sanitary napkins. yang benar, serta dampak yang dapat timbul akibat kurang menjaga Menstrual hygiene. Providing information through interactive flipcharts helped respondents understand the material more easily, resulting in increased knowledge after the intervention.

This fact indicates that before the education, most adolescent girls still lacked an optimal understanding of menstrual hygiene, such as how often to change sanitary pads, how to clean the genital area, and the impact of poor hygiene. This finding also aligns with preliminary studies, which showed that some female students only changed sanitary pads when they were full or during bathing.

According to research (Fitriliana & Meikawati, 2024) stated that health education has a significant influence on increasing adolescent girls' knowledge about menstrual personal hygiene. Another study conducted by (Yuliana Yuningsi et al., n.d, 2023.) also shows that providing health education can significantly improve adolescents' understanding through the process of delivering appropriate information. According to research (Widiyanti et al., 2023) explained that adolescents' low knowledge about menstrual hygiene is due to a lack of access to reproductive health information and education. After educational interventions, knowledge increased as respondents gained previously unknown information.

Furthermore, visual media can increase attention and interest in learning, making the information delivery process more effective. Therefore, the success of flipcharts in this study was also influenced by their interactive delivery methods. Respondents not only passively received information but also engaged in the learning process through discussions and questions and answers. This led to deeper understanding and influenced attitude change.

This study also had limitations: it involved only one treatment group without a comparison group, so changes after the intervention could not be compared with other groups. Second, during the questionnaire filling process, the seating arrangement for respondents did not fully allow for optimal distance between participants. This situation has the potential to create inter-respondent influence, both through observation and the exchange of information regarding the answers given. This could affect the objectivity of responses and influence the measurement results obtained.

It can be concluded that the use of interactive flipcharts in this study proved effective in improving the level of knowledge of adolescent girls about menstrual hygiene, as indicated by a significant change from the poor to good category.

CONCLUSION

Based on the results of research conducted on adolescent girls at MTs Nurul Islam, Kediri City, it can be concluded that providing education using interactive flipchart media has an effect on increasing adolescent girls' knowledge about menstrual hygiene. After participating in the educational activities, there was a change in the level of respondents' knowledge as indicated by a decrease in the number of respondents in the poor knowledge category and an increase in the number of respondents in the good knowledge category. This indicates that the information conveyed through interactive flipchart media can be well received and understood by respondents. Thus, interactive flipchart media can be used as an alternative, effective health promotion media to increase adolescent girls' knowledge about the importance of maintaining hygiene during menstruation.

REFERENCE

- Aprianti, N. F., Faizaturrahmi, E., & Ilmiyani, S. N. (2026). *Hubungan Peran Keluarga Terhadap Sikap Personal Hygiene Saat Menstruasi Pada Remaja Putri*. 4(5), 1173–1178.
- Badan Pusat Statistik. (2022). No Title. *Statistik Pemuda Indonesia*, p:420.
- Fadilasani, R., Sugito, H., & Purnamasari, D. (2023). PENGETAHUAN TENTANG MENSTRUASI MEMBENTUK SIKAP POSITIF PERSONAL HYGIENE REMAJA PUTRI. *WOMB Midwifery Journal (WOMB Mid.J)*, 2(1), 16–22. <https://jurnal.stikesbanyuwangi.ac.id/index.php/WMJ>
- Fitriliana, D. R., & Meikawati, P. R. (2024). Hubungan Usia Menarche Dengan Perilaku Personal Hygiene Remaja Putri di Pondok Pesantren Al-Falah Sofwaniyah Jatirokeh. *JURNAL KESEHATAN TERAPAN*, 11(1), 73–79. <https://doi.org/10.54816/jk.v11i1.775>
- Indri, D., Salsabila, B., & Wibowo, S. S. (2026). *The Relationship between Knowledge and Attitudes toward*. 9, 69–78.
- Kartika Adyani. (2024). *Open Access*. 7(3), 550–558.
- Kemenkes RI. (2017). *Manajeme kebersihan menstruasi perlu dipahami*. <https://kemkes.go.id/id/manajemen-kebersihan-menstruasi-perlu-dipahami>
- Kesehatan, M., Universitas, M., Dahlan, A., & Yogyakarta, K. (2022). 1, 1 1. 13(1), 1–11.
- Kualitatif, S., Hygiene, P., Pada, M., & Putri, R. (2025). *JURNAL*. 8(3), 347–357.

- Makassar, S. M. A. N. (2025). *PENGEMBANGAN MEDIA PEMBELAJARAN FLIPCHART DILENGKAPI QUICK RESPONSE (QR) CODE PADA MATERI PERUBAHAN IKLIM UNTUK KELAS X SMA NEGERI 8 MAKASSAR* Info Artikel : Keyword : Abstrak. 4(1), 130–140.
- Notoatmodjo, S. (2012). *Promosi Kesehatan dan Perilaku Ksehatan*. Rineka Cipta. <https://share.google/h99RfYvPuJ7yZrHXI>
- Putu, N., Widyasturi, D., Widhi, M., Darmapatni, G., & Widya, L. A. (2025). *HIGIENITAS MENSTRUASI REMAJA PUTRI DI SEKOLAH MENENGAH PERTAMA NEGERI 2 BLAHBATUH*. 6, 18482–18494.
- Ratnaningsih, D., Wongo, D. N., Susilani, A. T., & Yuliasri, T. R. (2026). *Evaluasi Pengetahuan Remaja Putri Mengenai Kebersihan Diri Saat Menstruasi dalam Mendukung Kesehatan Reproduksi Remaja* Evaluation of Adolescent Girls ' Knowledge Regarding Personal Hygiene During Menstruation in Supporting Adolescent Reproductive Health. 17(1), 43–55.
- SUTRISNO, S. (2025). Hubungan Tingkat Pengetahuan dengan Perilaku Personal Hygiene saat Menstruasi pada Remaja Putri SMP Negeri 1 Surakarta. *Informasi Dan Promosi Kesehatan*, 4(1), 109–119. <https://doi.org/10.58439/ipk.v4i1.332>
- Untuk, D., Gelar, M., Keperawatan, S., Tinggi, S., Kesehatan, I., & Makassar, S. M. (n.d.). *OLEH: YULIANA YUNINGSI (C1914201107)*.
- Widiyanti, S., Yuliawati, Y., Aghniya, R., & Kemenkes Tanjungkarang, P. (2023). *Skrining Kesehatan Dalam Upaya Meningkatkan Status Kesehatan Remaja Di Kota Metro* Health Screening As An Effort To Improve Adolescent Health Status In Metro City. *Jurnal Anestesi: Jurnal Ilmu Kesehatan Dan Kedokteran*, 1(1).
- World Health Organization. (2024). *Menstrual health is a fundamental human right*. <https://www.who.int/europe/news/item/15-08-2024-menstrual-health-is-a-fundamental-human-right>